

EFFECT OF THE INVENTION

[0009] According to the present invention of claim 1, the member for connecting the high temperature section and the low temperature section is formed to have a split configuration and the high temperature section is formed of the heat resistant/high heat conductive material having high heat resistance property and high heat conductivity, thus the temperature of the high temperature section can be set higher compared to the prior art. Further, the member connecting the high temperature section and the low temperature section is made up of the member contacting with a flow of working gas, and the member is formed of the heat resistant/low heat conductive material having low heat conductivity, thus heat loss caused by conduction of heat at the connecting member can be reduced significantly, and, as a result, a high efficient stirling engine can be obtained. According to the invention of claim 2, the high temperature section and the member connecting the high temperature section and the low temperature section are formed of different materials and are integrally bonded to each other, and the high temperature section is formed by integrally molding the expansion space head portion and the high-temperature side heat exchanger main body with the same material, which is a heat resistant/high heat conductive material, thus the high-temperature side heat exchanger main body can be integrally formed thickly, can also be provided with a better pressure-tight structure compared to a conventional high-temperature side heat exchanger main body in which only a heat-transfer tube is formed in a protruding fashion, heating temperature of the high temperature section can be raised higher, and the durability can be improved. Furthermore, according to the invention of claim 4, in addition to the configuration of claim 2, the connecting member is formed of the heat resistant/low heat conductive material having low heat conductivity, thus heat loss caused by conduction of heat at the connecting member can

be reduced significantly, compared to the prior art, and, as a result, a high efficient stirling engine can be obtained. By forming the high temperature section with a ceramic material having heat resistance/high heat conductivity, and by forming the connecting member with a ceramic material having heat resistance/low heat conductivity, heat resistance property, pressure tightness, oxidation resistance, corrosion resistance, high creep strength, and high heat fatigue strength with respect to the working gas can be enhanced, the heating temperature in the high temperature section can be increased, and the durability can be improved.